What Is Claimed Is:

1. A synthetic silica glass molding method, comprising:

accommodating a synthetic silica glass bulk inside a molding vessel;

interposing an elastic member having a ventilating property between a pressing member and the synthetic silica glass bulk;

providing a fastener for fastening at least peripheral edge portions of the elastic member to the pressing member; and

pressing the synthetic silica glass bulk against the molding vessel by the pressing member in a high-temperature condition to mold the synthetic silica glass bulk into a synthetic silica glass member having a shape conforming to a shape of the space defined by the pressing member and the molding vessel, the synthetic silica glass bulk being pressed in such a manner that the pressing member and the elastic member tightly fasten to each other through the fastener.

2. The method according to claim 1, wherein providing the fastener includes forming the pressing member and the elastic member from the same material, and

wherein pressing the synthetic silica glass bulk against the molding vessel includes fastening the elastic member tightly to the pressing member by thermal fusion.

3. The method according to claim 1, wherein providing the fastener includes providing a first engaging part on the pressing member and providing in the elastic member a second engaging part configured to be engaged with the first engaging part, and

wherein pressing the synthetic silica glass bulk includes engaging the first engaging part on the pressing member with the second engaging part in the elastic member so as to fasten tightly the pressing member to the elastic member.

4. The method according to claim 3, wherein one of the first and second engaging parts has an L shape, and the other one of the first and second engaging parts has a groove shape to be engaged with the L-shaped engaging part.

5. The method according to claim 1, wherein the elastic member is a plate-form felt member made of carbon fibers.

6. The method according to claim 1, wherein the pressing member is a weight that presses against the upper surface of the synthetic silica glass bulk.

7. The method according to claim 1, wherein pressing the synthetic silica glass bulk against the molding vessel includes providing an inert gas atmosphere retained at an atmospheric pressure or higher.

8. A synthetic silica glass molding apparatus, comprising:

a molding vessel configured to accommodate a synthetic silica glass bulk;

a heater for heating the molding vessel;

a pressing member that presses the synthetic silica glass bulk in a high-temperature condition against the molding vessel to mold the synthetic silica glass bulk into a synthetic silica glass member having a shape conforming to the shape of a space defined by the pressing member and the molding vessel;

an elastic member having a ventilating property, configured to be interposed between the pressing member and the synthetic silica glass bulk; and

a fastener configured to fasten at least peripheral edge portions of the elastic member to the pressing member,

wherein the pressing member presses the synthetic silica glass bulk in such a manner that the pressing member and the elastic member tightly fasten to each other through the fastener.

9. The apparatus according to claim 8, wherein the fastener corresponds to a portion of the pressing member and a portion of the elastic member, each of which is made of the same material, and the portion of the pressing member and the portion of the elastic member undergo thermal fusion when the pressing member presses the synthetic silica glass bulk in the high-temperature condition so that the elastic member tightly is tightly fastened to the pressing member.

10. The apparatus according to claim 8, wherein the fastener includes a first engaging part on the pressing member and a second engaging portion in the elastic member, the first

engaging part being engaged with the second engaging part when pressing member presses the synthetic silica glass bulk in the high temperature condition so that the elastic member is tightly fastened to the pressing member.

11. A synthetic silica glass molding method, comprising:

providing a graphite molding vessel that has been subjected to a purification treatment,

providing a pressing member;

providing a plate-form felt member made of carbon fibers on a surface of each of the graphite molding vessel and the pressing member to alleviate stress and suppress deterioration of a synthetic silica glass bulk to be molded, the plate-form felt member having been subjected to a purification treatment;

accommodating a synthetic silica glass bulk inside the graphite molding vessel; and

pressing the synthetic silica glass bulk against the molding vessel by the pressing member in a high-temperature condition to mold the synthetic silica glass into a synthetic silica member having a shape conforming to the shape of a space defined by the pressing member and the graphite molding vessel.

12. The method according to claim 11, wherein each of the graphite molding vessel and the felt member has an ash content of about 10 ppm or less.

13. The method according to claim 11, wherein the surface of the graphite molding vessel is coated with β-SiC.

14. The method according to claim 11, wherein the porosity of the graphite molding vessel is about 10% or less.

15. The method according to claim 11, wherein pressing the synthetic silica glass bulk against the molding vessel includes providing an inert gas atmosphere retained at an atmospheric pressure or higher.

16. The method according to claim 11, wherein pressing the synthetic silica glass bulk against the molding vessel includes retaining a treatment temperature at about 1750°C to about 1850°C for a time period ranging from about 10 minutes to about 60 minutes.

17. A synthetic silica glass member manufactured by any one of claim 11-16, wherein a fluctuation in transmissivity of the synthetic silica glass member in a direction perpendicular to an axis along which light is transmitted through the member is about ± 1% or less per centimeter of the thickness of the member in the wavelength region of about 250 nm or less, and the synthetic silica glass member is adapted for use in an exposure apparatus employing light in the region of ultraviolet to vacuum ultraviolet.

18. The synthetic silica glass member according to claim 17, wherein the total concentration of metal impurities contained in the member is about 50 ppb or less.

19. The synthetic silica glass member according to claim 17, wherein a fluctuation in concentration of fluorine in the member is about 0.5 wt % or less.

20. The synthetic silica glass member according to claim 17, wherein the synthetic silica glass member is one of an exposure apparatus lens member and a photo-mask member for use in an exposure apparatus employing light in the region of ultraviolet to vacuum ultraviolet.

21. A synthetic silica glass member manufactured by any one of claim 11-16, wherein a fluctuation in transmissivity of the synthetic silica glass member in a direction perpendicular to an axis along which light is transmitted through the member is about ± 0.5% or less per 1/4 inch of the thickness of the member at a wavelength of about 157.6 nm, and the synthetic silica glass member is adapted for use in a vacuum ultraviolet exposure apparatus.

22. The synthetic silica glass member according to claim 21, wherein the synthetic silica glass member contains fluorine, and the concentration of the OH group in the synthetic silica glass member is about 1 ppm or less.